

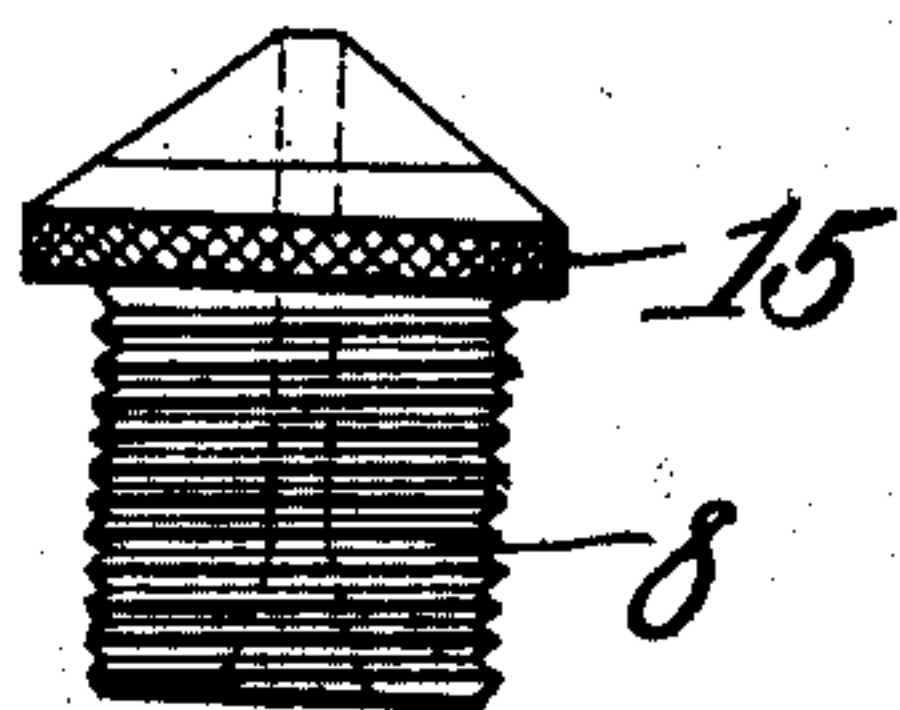
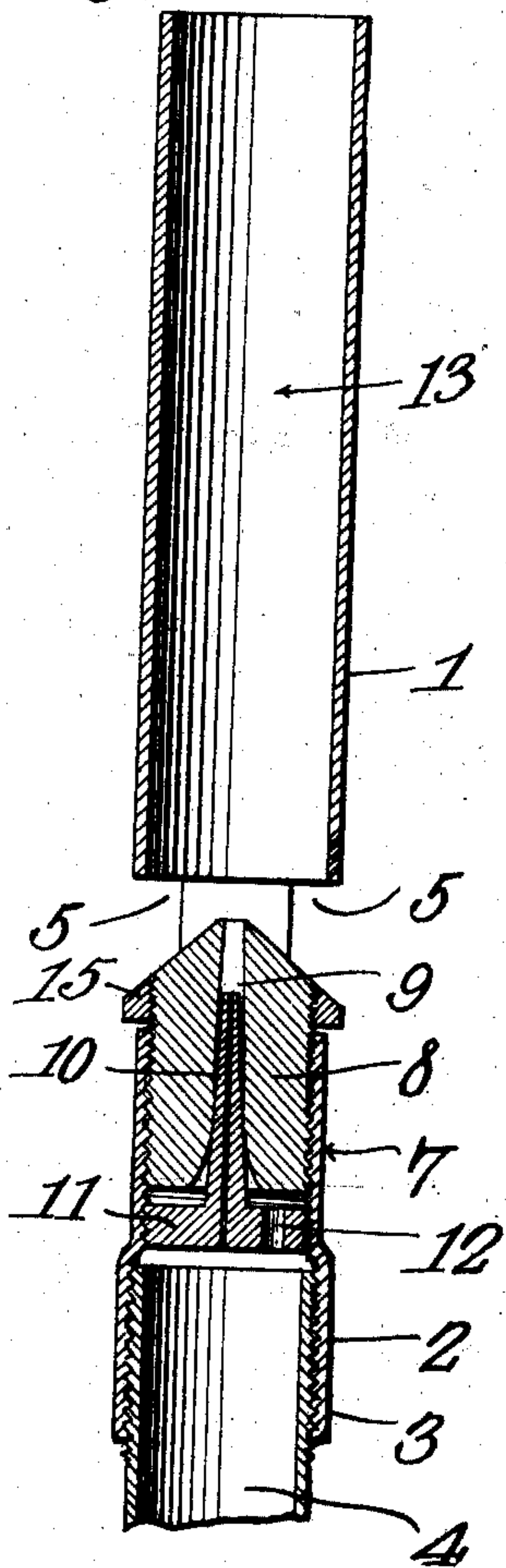
No. 864,182.

PATENTED AUG. 27, 1907.

B. L. NOYES.  
GAS BURNER.

APPLICATION FILED JAN. 23, 1907.

*Fig. 1.*



*Fig. 3.*

WITNESSES:

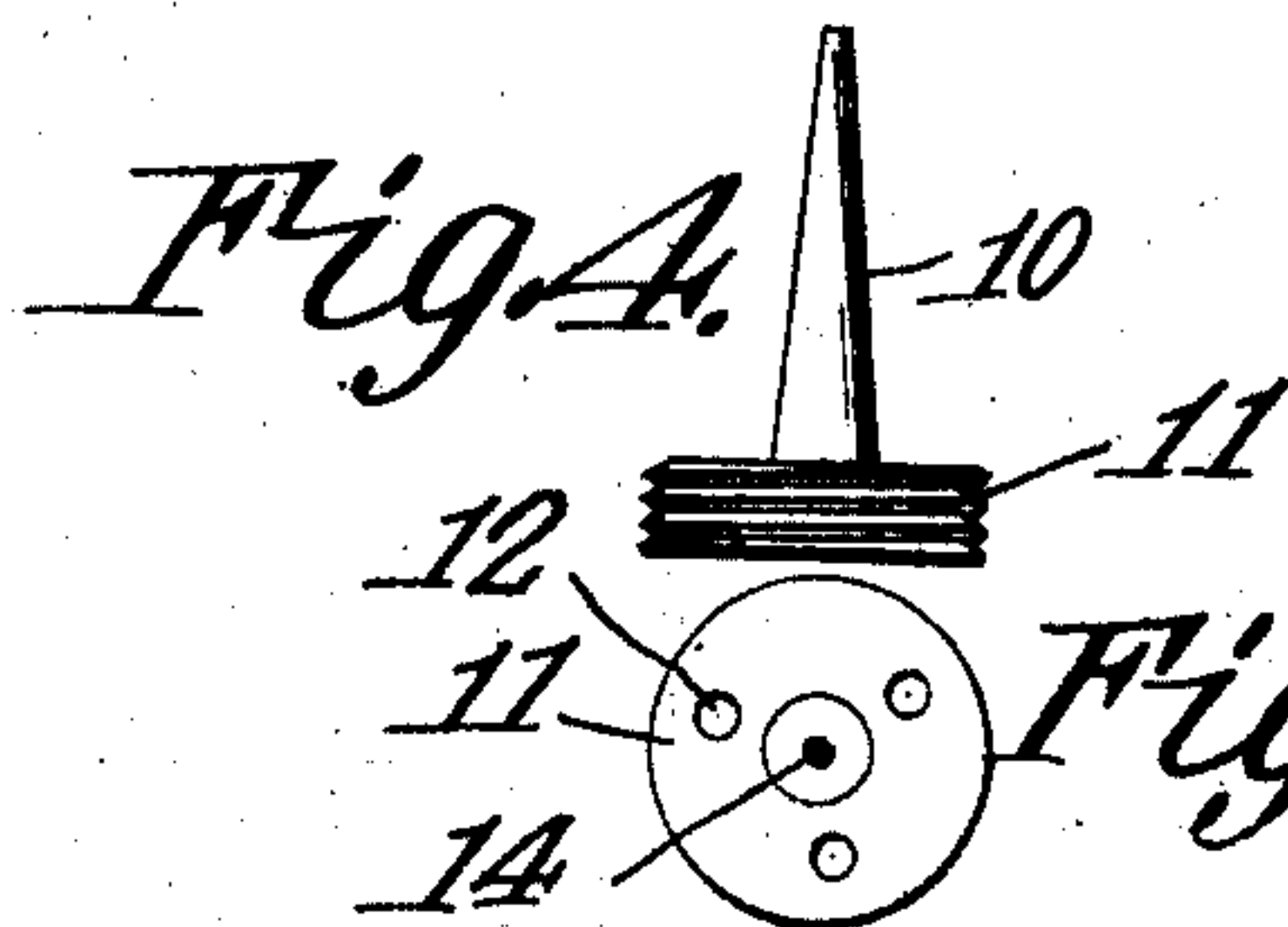
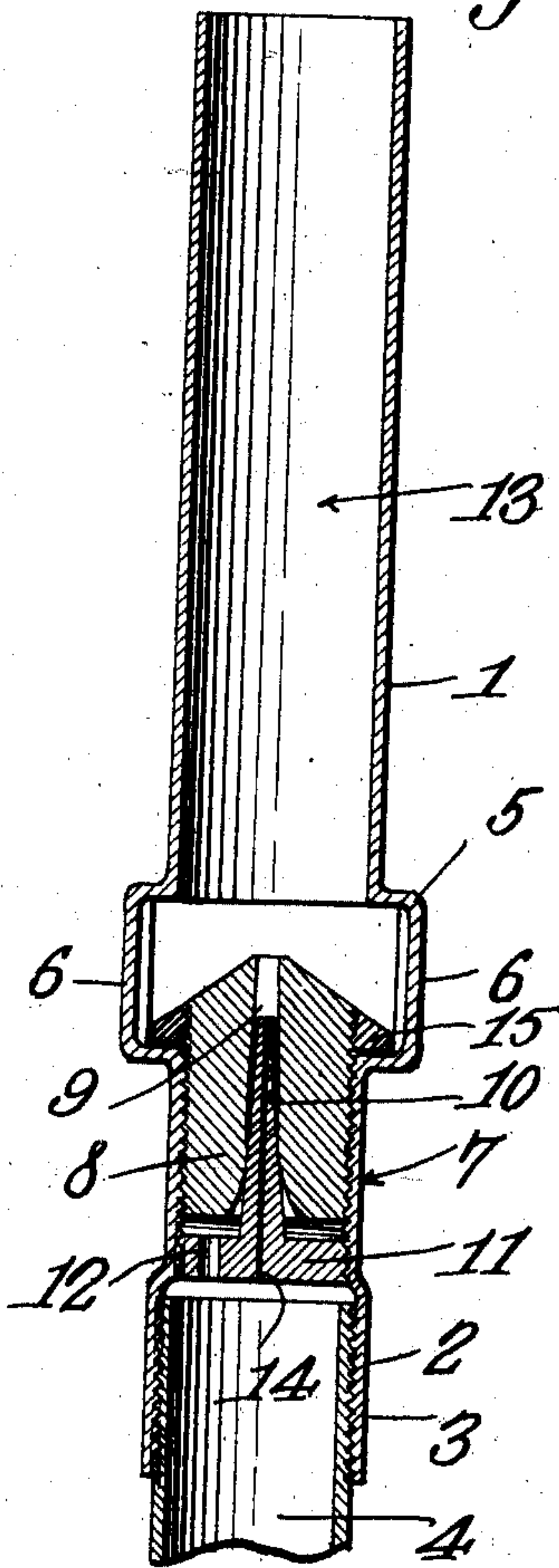
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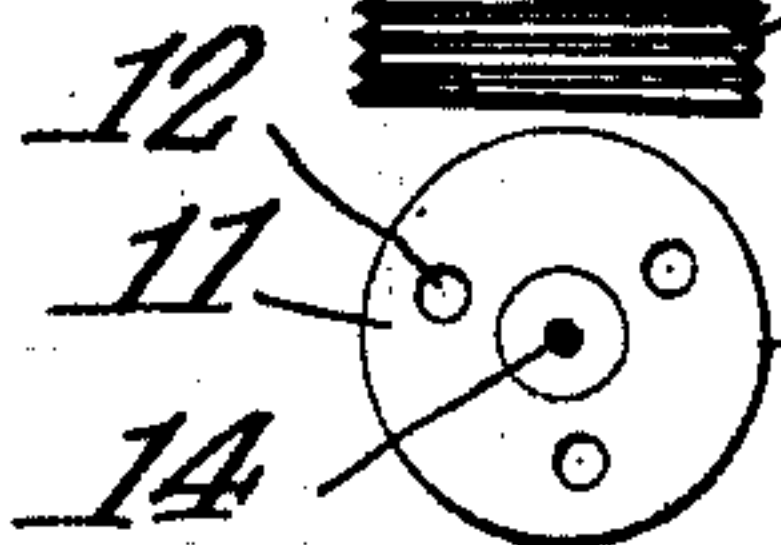
By

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ATTORNEYS

*Fig. 2.*



*Fig. 5.*





# UNITED STATES PATENT OFFICE.

BENJAMIN LAKE NOYES, OF STONINGTON, MAINE.

## GAS-BURNER.

No. 864,182.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed January 23, 1907. Serial No. 353,709.

*To all whom it may concern:*

Be it known that I, BENJAMIN LAKE NOYES, a citizen of the United States, residing at Stonington, in the county of Hancock and State of Maine, have invented a new and useful Gas-Burner, of which the following is a specification.

This invention relates to a Bunsen gas burner for incandescent lighting of that type in which the proportions of gas and air can be properly adjusted by means of a single valve which is readily and conveniently actuated without having to turn the gas tube or body of the burner and the attached parts, as is necessary with certain types of burners in common use.

The invention has for one of its objects to improve and simplify the construction and operation of devices of this character, so as to be comparatively easy and inexpensive to manufacture, readily adjusted to obtain the proper proportions of gas and air, and thoroughly reliable and efficient in use.

A further object of the invention is to provide a gas burner of the type referred to which is composed of few parts and is adapted to operate with comparatively little noise or hissing.

With these objects in view, and others, as will appear as the nature of the invention is better understood, the invention comprises the various novel features of construction and arrangement of parts, which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates one of the embodiments of the invention, Figure 1 is a longitudinal sectional view of a mixing tube and regulating valve of an incandescent gas burner. Fig. 2 is a similar view taken on a plane at right angles to the section in Fig. 1. Fig. 3 is a side view of a regulating valve. Fig. 4 is a side view of a combined valve seat and diaphragm. Fig. 5 is a plan view thereof.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

Referring to the drawing, 1 designates the tubular body of the burner which is slightly enlarged at its lower end 2 and provided with an internal thread 3 for screwing onto the gas cock, or other fixture indicated in part by 4. At a point adjacent the middle of the body 1 are inlet openings 5 formed by cutting away the tubular body at diametrically opposite points. The remaining portions of the body 1 between the openings 5 are offset laterally, as indicated at 6, Fig. 2. The section of the body above the air inlet openings 5 constitutes a mixing chamber in which the air and gas are mixed before passing to the mantle of the burner. The mantle and globe, and their supports, have not been shown in the present instance, since they are not essential to an understanding of the invention. The neck 7

of the body 1, located between the enlargement 2 and offsets 6, is interiorly threaded throughout its length by a thread of comparatively fine pitch.

Arranged in the neck 7 is a plug valve 8 that is exteriorly threaded to engage the thread of the neck so that by turning the valve the latter is moved vertically. The valve is provided with a central passage 9 that tapers gradually to the upper end. Into the passage 9 extends the comparatively long conical valve seat 10 which is formed on the diaphragm 11 secured in the lower end of the neck 7. The periphery of the diaphragm is preferably threaded so as to engage the same thread of the neck 7 that holds the valve 8. The diaphragm is provided with a plurality of gas passages 12 whereby gas flows to the upper side of the diaphragm, thence through the valve passage 9 to the mixing chamber 13 of the device.

Extending vertically through the diaphragm and conical valve seat 10 is a fine hair-like passage 14 which is permanently open. The tip of the valve seat, or discharge end of the passage 14, is located some distance below the discharge end of the valve passage 9 so that gas can discharge from the latter without producing the hissing sound so common in burners of ordinary use.

Adjacent the upper end of the valve 8 is a knurled head 15 which projects laterally through the openings 5 so that the valve can be gripped between the thumb and first finger and turned to the right or left for the purpose of lowering or raising the valve with respect to its seat.

In order to assemble the parts, the head 15 is formed by a ring which is interiorly threaded to screw on the thread of the valve. The valve 8 is screwed into the neck 7 a sufficient distance to project beyond the upper end thereof, so that the ring can be screwed onto the said projecting end of the valve, the ring being inserted laterally through one of the openings 5. After the valve is screwed into position, the diaphragm 11 is inserted into the lower end of the neck with the seat 10 extending upwardly to enter the valve passage 9, and the diaphragm is then screwed into its proper position in the neck. The upper end of the valve 8 and the ring 15 are shaped to form a frustum of a cone that serves as a deflector for directing the incoming air passing through the openings 5 in an upward direction to mingle with the jet of gas passing out of the valve passage 9.

When the parts are in the position shown in Figs. 1 and 2 and the usual cock in the gas fixture is turned on, a minute jet of gas passes up through the passage 14 and discharges through the valve 8. This serves to supply sufficient gas to enable a small flame to burn at the usual gauze wire on the mantle base which rests on the upper end of the mixing tube 13. This small flame can



be left burning when a light is not required, as, for instance, when one goes out or retires for the night. No matches are then required for igniting the gas when the light is again wanted. To produce an illuminating flame, all that is required is to turn the valve 8 so as to raise it from its seat 10. This increases the volume of gas passing up through the mixing tube which, with an increased flow of air, burns at the mantle of the lamp. When the light or igniting flame is not needed, the gas cock is shut off. In order to regulate the proportion of gas to air, the valve 8 is turned so as to move up or down, thereby varying the effective area between the seat 10 and valve passage 9 and also varying the effective area of the openings 5 for the entrance of air. By thus adjusting the valve, the proportions of gas and air can be regulated to a nicety, thereby insuring proper combustion and illumination.

I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, but I desire to have it understood that the device shown is merely illustrative, and that various changes may be made, when desired, as are within the scope of the claims.

What is claimed is:—

- 25 1. A gas burner comprising a tubular body having intermediate portions thereof cut away, the connecting portions of the body being offset outwardly beyond the periphery of the body and arranged at diametrically opposite points, the body at one side of the air inlets being internally threaded, an apertured diaphragm extending transversely of the tubular body at one side of the air inlets and provided with an axially arranged conical valve member, a regulating valve having threads on its periphery cooperating with the internal threads of the tubular body and provided with a conical seat arranged to cooperate with the valve member on the diaphragm, and an operating head composed of a ring detachably fitted on the valve and projecting beyond the sides of the body and into the expanded portion formed by the outwardly offset connecting portions of the body.

jecting beyond the sides of the body and into the expanded portion formed by the outwardly offset connecting portions of the body.

2. In a gas burner, the combination with a tubular body having an intermediate portion expanded in diameter and provided with an air inlet and having one end internally threaded, of a diaphragm threaded into the tubular body and having an axially extending elongated conical portion provided with a minute axial bore extending from one side of the diaphragm to the other, the diaphragm having relatively larger passages independent of the central passage, a valve having a portion cooperating with the internal threads of the body portion and provided with an axially elongated passage adapted to receive the conical portion of the diaphragm, and an operating ring detachably secured to the periphery of the said valve and arranged in the expanded portion of the body.

3. In a gas burner, the combination with a tubular body having its opposite sides cut away at a point intermediate its length, the connecting portions of the body being expanded laterally to form an intermediate enlargement having air openings in its sides, the tubular body below the enlargement being threaded, of a diaphragm fitted into the threaded portion of the tubular body and having an upwardly extending elongated conical portion, the latter having a gas passage discharging axially at its upper end, relatively larger gas passages being formed in the diaphragm independently of the central passage, a valve threaded in the tubular body above the diaphragm and having a conical seat adapted to cooperate with the conical portion of the diaphragm and having a passage extending beyond the end of the conical portion and discharging into the enlarged portion of the tubular body, and an operating head attached to the valve and projecting into the enlarged portion of the body and accessible for operation through the air opening thereof.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

BENJAMIN LAKE NOYES.

Witnesses:

S. B. THURLOW,  
F. E. WEBB.